

## 1. BASIC INFORMATION

<b>Course</b>	BUSINESS MATHEMATICS
<b>Degree program</b>	BACHELOR DEGREE IN MANAGEMENT AND BUSINESS ADMINISTR.
<b>School</b>	FACULTY OF SOCIAL SCIENCIES
<b>Year</b>	1st YEAR
<b>ECTS</b>	6
<b>Credit type</b>	MANDATORY
<b>Language(s)</b>	ENGLISH
<b>Delivery mode</b>	ON SITE
<b>Semester</b>	1st
<b>Academic year</b>	2024-25
<b>Coordinating professor</b>	ROBERTO GOMEZ CALVET

## 2. PRESENTATION

Business mathematics is a subject that will provide tools to analyze economic problems. Throughout this course the student will be able to review and learn the basic concepts and tools in order to follow other courses of the degree. For instance, one cannot study Statistics, Econometrics or Financial Management without a solid knowledge of functions or linear algebra, their properties and the way they can be combined in order to build an economic model.

To cite a few examples, Algebra is useful in the presentation and processing of data, in input-output analysis, in accounting analysis, in financial models, in the study of statistical functions and econometric models, in activity planning especially through mathematical programming in all its facets, in business management and control... Function analysis helps us find good data fitting models, to study economic theory models both qualitatively and quantitatively, for plotting temporal trajectories, which are very useful for visualizing the evolution of economic variables not only quantitatively but also qualitatively; it also allows us to study economic behaviors in the short/medium/long term and is the basis of many economic theories.

## 3. LEARNING OUTCOMES

### LEARNING OUTCOMES OF THE DEGREE PROGRAMME:

#### Skills:

- HAB06: Ability to use the necessary mathematical tools for solving economic problems and utilizing basic methods of calculus, algebra, and programming..

#### Competences:

- CPT01: Create new ideas and concepts from known ideas and concepts, reaching conclusions or solving problems, challenges, and situations in an original way.

- CPT05: Cooperate with others in achieving a shared goal, participating actively, empathetically, and exercising active listening and respect for all members.
- CPT06: Integrate analysis with critical thinking in a process of evaluating different ideas or possibilities and their potential for error, based on evidence and objective data that lead to effective and valid decision-making.
- CPT07: Adapt to adverse, unexpected situations that cause stress, whether personal or professional, overcoming them and even turning them into opportunities for positive change

**Learning outcomes of the subject:**

- Understanding of basic concepts related to linear algebra, differential calculus, and operational research applied to solving business problems.
- Analysis and solving of problems related to linear algebra, differential calculus, and operational research that demonstrate an understanding of the theoretical concepts covered.
- The following table shows the relationship between the competencies developed during the course and the learning outcomes pursued:

## 4. CONTENT

Topic 1 - Linear Algebra: Resolution of systems of equations and matrix analysis

Topic 2 - Function analysis

Topic 3 - Differential calculus

Topic 4 - Integral calculation of functions with immediate integral.

## 5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

- Case base study
- Cooperative learning
- Problem-based learning
- Project-based learning
- Master class

## 6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

**Campus-based mode:**

Learning activity	Number of hours
AF1 Master lessons (synchronous + asynchronous)	55 h
AF2 Autonomous work	20 h
AF3 Oral presentations	0 h
AF4 Case study and problema solving	40 h
AF5 Team based activities	20 h
AF6 Knowledge tests	5 h

AF7 Tutoring	10 h
AF8 Report and Project thesis	0 h
<b>TOTAL</b>	<b>150 h</b>

## 7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

### Campus-based mode:

Assessment system	Weight
Knowledge test	50%
Class developed activities	25%
Exercises, Project	25%

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

### 7.1. First exam period

To pass the course in the first exam period, you must obtain a final course grade of at least 5 out of 10 (weighted average).

In any case, you will need to obtain a grade of at 5.0 in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

### 7.2. Second exam period

To pass the course in the second exam period, you must obtain a final grade of at least 5 out of 10 (weighted average).

In any case, you will need to obtain a grade of at 5.0 in the final exam in order for it to count towards the final grade along with all the grades corresponding to the other activities.

The student must deliver the activities not successfully completed in the first exam period after having received the corresponding corrections from the professor, or those that were not delivered in the first place.

## 8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Assessable activities	Deadline
Introduction to Business Maths	2nd week
Funcions activity	5th week
Linear Algebra activity	8th week
Optimization activity	11th week
Integration activity	14th week
Project	17th week

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

## 9. BIBLIOGRAPHY

The main reference work for this subject is:

- DOWLING, EDWARD T. (1992). Schaum's outline of theory and problems of introduction to mathematical economics. UEV Library signature: HB135 .D68 2012
- ALEGRE, P. (1993). Ejercicios resueltos de matemáticas empresariales 2. UEV Library signature: QA43 .E35 1993
- ALEGRE, P. (1991). Ejercicios resueltos de matemáticas empresariales 1. UEV Library signature: QA43 .E35 1993
- HAEUSSLER, ERNEST F. (2008). Matemáticas para la administración y economía. UEV Library signature: QA40 .T3618 2008

The recommended Bibliography is:

- GARCÍA PINEDA, M. P., Nuñez del Prado, J. A., & Sebastián Gómez, A.. (2007). Iniciación a la matemática universitaria. Curso 0 de matemáticas. Editorial Paraninfo.
- Tan, S. T., & Hernández, M. R. (1998). Matemáticas para administración y economía (No. 513.93 T357M.). International Thomson Editores

## 10. DIVERSITY MANAGEMENT UNIT

From the Educational Guidance, Diversity and Inclusion Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by means of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.

4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:  
[orientacioneducativa.uev@universidadeuropea.es](mailto:orientacioneducativa.uev@universidadeuropea.es)

## 11. ONLINE SURVEYS

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the “surveys” section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.

## PLAGIARISM REGULATIONS

According to the disciplinary regulations for students of the European University:

Plagiarism, in whole or in part, of intellectual works of any kind is considered a very serious offense. Very serious offenses related to plagiarism and the use of fraudulent means to pass evaluation tests will result in the loss of the corresponding exam session, as well as the recording of the offense and its reason in the academic record.

## AI USAGE REGULATIONS

The student must be the author of their own work/activities.

The use of Artificial Intelligence (AI) tools must be authorized by the instructor for each work/activity, indicating how their use is permitted. The instructor will inform in advance in which situations AI tools can be used to improve spelling, grammar, and general editing. The student is responsible for specifying the information provided by the tool and properly declaring the use of any AI tool, according to the guidelines set by the instructor. The final decision on the authorship of the work and the appropriateness of the reported use of an AI tool rests with the instructor and the degree program officials.